Amendments to the Drawings:

The attached sheet of drawings includes changes to FIGURE 7. This sheet, which includes FIGURE 7, replaces the original sheet including FIGURE 7.

In FIGURE 7, element 710 has been amended to insert -- one -- after "obtain" so as to change "Form or obtain or more cores or studs" to -- Form or obtain one or more cores or studs --.

In FIGURE 7, element 720 has been amended to replace "wholes" with -- hole --.

In FIGURE 7, element 730 has been amended to replace "core" with – cores --, and to replace "wholes" with -- hole --.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes

REMARKS/ARGUMENTS

Claims 1-13 are pending in this application, and new claims 14-19 have now been added.

1. Objection to the Drawings Under 37 C.F.R. 1.83(a)

The drawings stand objected to under 37 C.F.R. 1.83(a). The Examiner stated that the drawings must show every feature of the invention specified in the claims. Furthermore, the Examiner indicated that the fins must be shown or the feature canceled from the claims.

Applicants have now amended the application to cancel dependent claims 5 and 13, which previously included the feature of the fins. Accordingly, applicants believe that the objection to the drawings is now moot.

Applicants have now amended FIGURE 7 of the drawings to correct the clerical errors identified above and in the replacement sheet attached hereto. In addition, an annotated sheet showing changes is attached hereto. No new matter is being added.

2. Rejection of Claims 2-8 Under 35 U.S.C. 112, Second Paragraph

Claims 2-8 stand rejected under 35 U.S.C. 112, first paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants have now amended claims 2-8 to delete the recitation of "application specific" from the preamble of each of the claims. Accordingly, applicants believe that claims 2-8 are now in condition for allowance, and allowance thereof is respectfully requested.

3. Rejection of Claims 1-23 Under 35 U.S.C. 102(a)

Claims 1-5, 8, 9, 12 and 13 stand rejected under 35 U.S.C. 102(a) as being anticipated by Krassowski et al. (U.S. Patent No. 6,758,263; hereinafter "Krassowski").

As discussed hereinabove, claims 5 and 13 are now canceled.

Independent claim 1, as amended, calls for a heat sink device for dissipating heat from an electronic component having a CTE, the heat sink device comprising a heat-dissipating substrate having one or more apertures and a CTE; one or more heat-dissipating studs attached within said one or more apertures within said heat-dissipating substrate so as to permit the electronic component to be attached to the heat-dissipating stud, and the one or more heat-dissipating studs comprising a material with a CTE between the CTE of the electronic component to be cooled and the CTE of the material of the heat-dissipating substrate; and ***a thin compliant elastomeric layer for isolating the heat-dissipating substrate and the one or more heat-dissipating studs from one another.***

Applicants believe that Krassowski discloses a heat spreader 14 which includes an anisotropic graphite planar element 16 having a relatively high thermal conductivity in the plane of the planar element 16 along dimensions x and y and having a relatively low thermal conductivity across a thickness 18 of the planar element in a direction z normal to the plane defined by dimensions x and y. Applicants believe that Krassowski discloses a core or insert 22 received in the cavity 20 of the heat spreader 12.

Applicants believe that Krassowski does not disclose or suggest an isolation means for isolating a first material of a heat-dissipating substrate and a second material of one or more heat-dissipating studs from one another. Accordingly, claim 1 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

Claims 2-4 and 8, which depend directly from independent claim 1, are believed to be in condition for allowance for at least the above-identified reasons. Accordingly, allowance of claims 2-4 and 8 is respectfully requested.

Independent claim 9, as amended, comprises a method for manufacturing a heat sink device for dissipating heat from an electronic component having a CTE,

comprising forming a heat-dissipating substrate with one or more apertures extending from a first surface to a second surface of the heat-dissipating substrate, and the heat-dissipating substrate comprising a material with a CTE; ***forming one or more heat-dissipating studs comprising a material with a CTE between the CTE of the electronic component to be cooled and the CTE of the material of the heat-dissipating substrate***, wherein the one or more heat-dissipating studs are shaped and sized to mate within the aperture in the heat-dissipating substrate, extending from one side to the other of the aperture and mate with an electronic device to be cooled on one side of the aperture; and attaching the heat-dissipating stud within the aperture of the substrate.

Applicants believe that Krassowski discloses a method for placing inserts in the cavities of the heat dissipating components. Applicants believe that Krassowski discloses that one method is to machine the insert to a very slightly larger diameter or dimension than the cavity machined into the graphite. Then the insert is cooled to contract to a diameter or dimension less than that of the cavity, allowing the insert to be placed inside the cavity. Upon warming of the insert to room temperature, the insert expands and fits snugly within the cavity with no adhesives or binders. Applicants believe that Krassowski discloses that a thin layer of thermal grease or phase change material or other lubricant can be coated onto the insert or on the inside of the cavity prior to inserting the insert.

Applicants believe that Krassowski does not disclose or suggest a a method for manufacturing a heat sink device for dissipating heat from an electronic component having a CTE, comprising forming one or more heat-dissipating studs comprising a material with a CTE between the CTE of the electronic component to be cooled and the CTE of the material of the heat-dissipating substrate. Accordingly, independent claim 9 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

Claim 12, which depends directly from independent claim 9, is believed to be in condition for allowance for at least the above-identified reasons. Accordingly, allowance of claim 12 is respectfully requested.

4. Rejection of Claims 6, 7, 10 and 11 Under 35 U.S.C. 103(a)

Claims 6, 7, 10 and 11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Krassowski et al. (U.S. Patent No. 6,758,263; hereinafter "Krassowski") in view of Mishima et al. (Japanese Publication No. JP8186204A; hereinafter "Mishima").

Independent claim 1, as amended, calls for calls for a heat sink heat sink device for dissipating heat from an electronic component having a CTE, the heat sink device comprising a heat-dissipating substrate having one or more apertures and a CTE; one or more heat-dissipating studs attached within said one or more apertures within said heat-dissipating substrate so as to permit the electronic component to be attached to the heat-dissipating stud, and the one or more heat-dissipating studs comprising a material with a CTE between the CTE of the electronic component to be cooled and the CTE of the material of the heat-dissipating substrate; and ***a thin compliant elastomeric layer for isolating the heat-dissipating substrate and the one or more heat-dissipating studs from one another.***

As discussed above, Applicants believe that Krassowski discloses a heat spreader 14 which includes an anisotropic graphite planar element 16 having a relatively high thermal conductivity in the plane of the planar element 16 along dimensions x and y and having a relatively low thermal conductivity across a thickness 18 of the planar element in a direction z normal to the plane defined by dimensions x and y. Applicants believe that Krassowski discloses includes a core or insert 22 received in the cavity 20 of the heat spreader 12.

Applicants believe that Mishima discloses that the "mounting member and heat dissipation part are coupled directly with each other." (See the Abstract of Mishima in the English language.)

Applicants believe that neither Krassowski nor Mishima teach or suggest an isolation means for isolating a first material of a heat-dissipating substrate and a second material of one or more heat-dissipating studs from one another. Accordingly, claim 1 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

Claims 6 and 7, which depend directly from independent claim 1, are believed to be in condition for allowance for at least the above-identified reasons. Accordingly, allowance of claims 6 and 7 is respectfully requested.

Independent claim 9, as amended, comprises a method for manufacturing a heat sink device for dissipating heat from an electronic component having a CTE, comprising forming a heat-dissipating substrate with one or more apertures extending from a first surface to a second surface of the heat-dissipating substrate, and the heat-dissipating substrate comprising a material with a CTE; forming one or more heat-dissipating studs comprising a material with a CTE between the CTE of the electronic component to be cooled and the CTE of the material of the heat-dissipating substrate, wherein the one or more heat-dissipating studs are shaped and sized to mate within the aperture in the heat-dissipating substrate, extending from one side to the other of the aperture and mate with an electronic device to be cooled on one side of the aperture; and attaching the heat-dissipating stud within the aperture of the substrate.

As discussed above, Applicants believe that Krassowski discloses a method for placing inserts in the cavities of the heat dissipating components. Applicants believe that Krassowski discloses that one method is to machine the insert to a very slightly larger diameter or dimension than the cavity machined into the graphite. Then the insert is cooled to contract to a diameter or dimension less than that of the cavity, allowing the insert to be placed inside the cavity. Upon warming of the insert to room temperature, the insert expands and fits snugly within the cavity with no adhesives or binders. Applicants believe that Krassowski discloses that a thin layer of thermal grease or phase change material or other lubricant can be coated onto the insert or on the inside of the cavity prior to inserting the insert.

Applicants believe that Mishima teaches away from the present invention in that "the heat sink is manufactured by filling a container wherein a mounting member is set with heat dissipation material and heating it to a fusing point of the heat dissipation member material or higher in non-oxidizing atmosphere." (See the Constitution of Mishima in the English language.) In addition, Applicants believe that Figures 5a and 5b illustrate a mounting member 1 placed in a container 4 and a heat radiating portion 2 formed adjacent to mounting member 1.

Applicants believe that neither Krassowski nor Mishima disclose or suggest a method for manufacturing a heat sink device for dissipating heat from an electronic component having a CTE, comprising forming a heat-dissipating substrate with one or more apertures extending from a first surface to a second surface of the heat-dissipating substrate, and forming one or more heat-dissipating studs comprising a material with a CTE between the CTE of the electronic component to be cooled and the CTE of the material of the heat-dissipating substrate. Claims 10 and 11, which depend directly from independent claim 9, are believed to be in condition for allowance for at least the above-identified reasons. Accordingly, allowance of claims 10 and 11 is respectfully requested.

5. New Claims 14-19

Applicants have now added new claims 14-19.

New claim 14 depends directly from independent claim 1, which is discussed hereinabove, and further calls for the heat sink device in accordance with claim 1, wherein the first material of the heat-dissipating substrate and the second material of the one or more heat-dissipating studs are electrically isolated from one another by the thin compliant elastomeric layer. Applicants believe that the prior art of record, either alone or in combination with one another, does not teach or suggest the heat sink device according to claim 1, wherein the first material of the heat-dissipating substrate and the second material of the one or more heat-dissipating studs are electrically isolated from one another by the thin compliant elastomeric layer. Accordingly, dependent claim 14 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

New claim 15 depends ultimately from independent claim 1, which is discussed hereinabove, and further calls for the heat sink device in accordance with claim 14, wherein the thin compliant elastomeric layer allows selective plating of one of the first material and the second material. Applicants believe that the prior art of record, either alone or in combination with one another, does not teach or suggest the heat sink device according to claim 14, wherein isolation means allow selective plating of one of the first material and the second material. Accordingly, dependent

claim 15 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

New claim 16 depends directly from independent claim 1, which is discussed hereinabove, and further calls for the heat sink device in accordance with claim 1, wherein the thin compliant elastomeric layer absorbs movement of the first material and the second material relative to one another. Applicants believe that the prior art of record, either alone or in combination with one another, does not teach or suggest the heat sink device in accordance with claim 1, wherein the thin compliant elastomeric layer absorbs movement of the first material and the second material relative to one another. Accordingly, dependent claim 16 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

New claim 17 depends directly from independent claim 1, which is discussed hereinabove, and further calls for the heat sink device in accordance with claim 1, wherein the thin compliant elastomeric layer absorbs CTE mismatch between the first material and the second material relative to one another. Applicants believe that the prior art of record, either alone or in combination with one another, does not teach or suggest the heat sink device in accordance with claim 1, wherein the thin compliant elastomeric layer absorbs CTE mismatch between the first material and the second material relative to one another. Accordingly, dependent claim 17 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

New claim 18 depends directly from independent claim 1, which is discussed hereinabove, and further calls for the heat sink device in accordance with claim 1, wherein the one or more apertures of the heat-dissipating substrate and the one or more heat-dissipating studs attached within said one or more apertures form one of a conical cross-section and pyramidal cross-section. Applicants believe that the prior art of record, either alone or in combination with one another, does not teach or suggest the heat sink device in accordance with claim 1, wherein the one or more apertures of the heat-dissipating substrate and the one or more heat-dissipating studs attached within said one or more apertures form one of a conical cross-section and pyramidal cross-section. Accordingly, dependent claim 18 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

New independent claim 19 calls for a heat sink device for dissipating heat from an electronic component, the heat sink device comprising a heat-dissipating substrate having one or more apertures, and ***the heat-dissipating substrate comprising a material with a CTE relatively close to the CTEs of adjacent elements so as to provide thermal transport in a direction perpendicular to the heat-dissipating substrate and reduce thermal stresses in a direction parallel to the heat-dissipating substrate and adjacent elements attached to one another;*** and one or more heat-dissipating studs attached within said one or more apertures within said heat-dissipating substrate so as to allow the electronic component to be attached to the heat-dissipating stud, and the one or more heat-dissipating studs comprising a material with a CTE between the CTE of the electronic component to be cooled and the CTE of the heat-dissipating substrate.

At page 7, lines 12-17 of the above-identified application, the specification states "the selection of the base material may be done on a best match of CTE(s) of all the circuit and adjacent elements. Since the base is substantially removed from the heat path, its thermal conductivity is not a primary concern. The stud 120 and base 110 composite heat sink provides thermal transport perpendicular to the die and minimal thermal stresses parallel to the die."

Applicants believe that the prior art of record does not teach or suggest heat-dissipating substrate comprising a material with a CTE relatively close to the CTE of adjacent elements so as to provide thermal transport in a direction perpendicular to the heat-dissipating substrate and reduce thermal stresses in a direction parallel to the heat-dissipating substrate and adjacent elements attached to one another. Accordingly, new independent claim 20 is believed to be in condition for allowance, and allowance thereof is respectfully requested.

Conclusion

In light of the amendments and remarks provided herein, applicants respectfully request the timely issuance of a Notice of Allowance.

Respectfully submitted,
DAHL & OSTERLOTH, L.L.P.

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Annotated Sheet Showing Changes

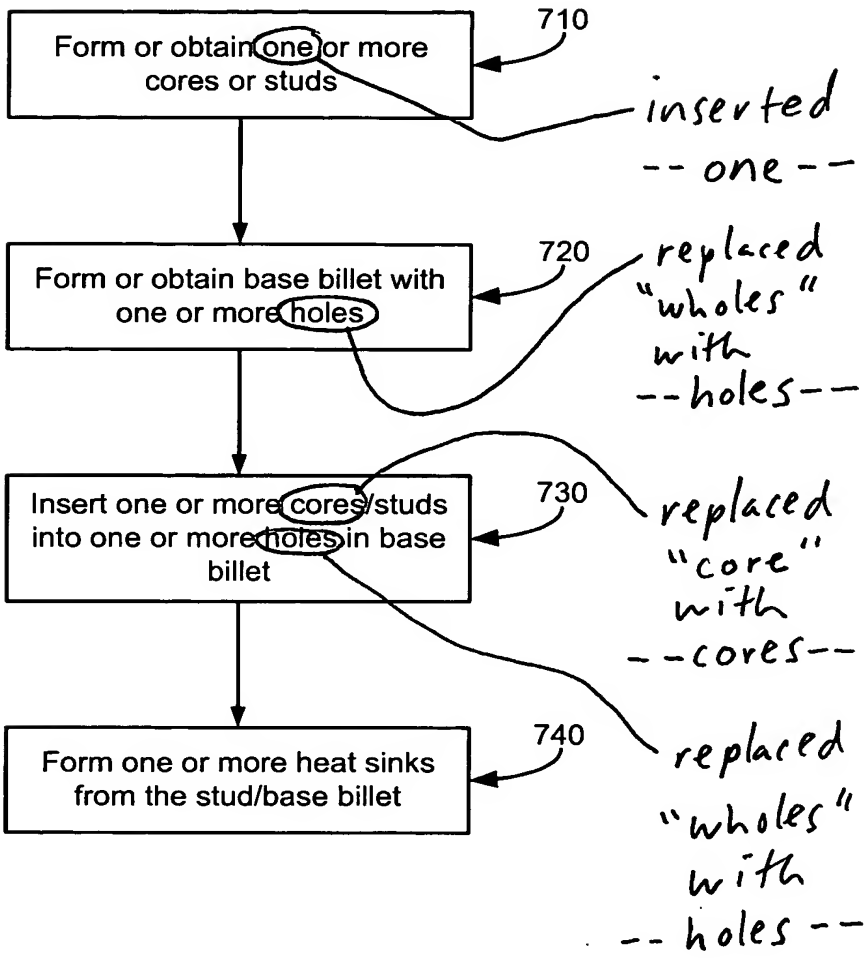

FIGURE 7